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 Terms used **media data** and **synchronization**

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### 1 [Synchronization of distributed multimedia data in an application-specific manner](#)



N. Agarwal, S. Son

 October 1994 **Proceedings of the second ACM international conference on Multimedia**

Publisher: ACM Press

Full text available: pdf(766.81 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

One of the distinctive features of multimedia systems is the wide range of applications they intend to cover, stretching the gamut from entertainment to life-critical applications such as real-time remote surgery. In the face of such a wide spectrum of applications, protocols used to deal with various issues in multimedia systems should be adaptable to the application. Synchronization is one of the key characteristics of a multimedia system. In this paper, we propose a mechanism for synchro ...

### 2 [Synchronization in multimedia data retrieval](#)

Anna Haj Hać, Cindy X. Xue

 January 1997 **International Journal of Network Management**, Volume 7 Issue 1

Publisher: John Wiley &amp; Sons, Inc.

Full text available: pdf(487.64 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Synchronization of multiple medium streams in real time has been recognized as one of the most important requirements for multimedia applications based on broadband high-speed networks. This article presents a complete synchronization scheme for distributed multimedia information systems. © 1997 John Wiley & Sons, Ltd.

### 3 [Causality and media synchronization control for networked multimedia games: centralized versus distributed](#)



Yutaka Ishibashi, Shuji Tasaka

 May 2003 **Proceedings of the 2nd workshop on Network and system support for games NetGames '03**

Publisher: ACM Press

Full text available: pdf(564.65 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#)

This paper makes a performance comparison between a centralized control scheme and a distributed control scheme; these two schemes were previously proposed by the authors so as to preserve causality and media synchronization for networked multimedia games. In the centralized control scheme, we have a single server which carries out causality control and multiple clients which exerts media synchronization control. In the distributed

control scheme, each client performs causality and media synchro ...

**Keywords:** causality, experiment, media synchronization, networked games

4 Technical session 7: multimedia systems: Inter-stream synchronization between haptic media and voice in collaborative virtual environments



Yutaka Ishibashi, Takeshi Kanbara, Shuji Tasaka

October 2004 **Proceedings of the 12th annual ACM international conference on Multimedia**

**Publisher:** ACM Press

Full text available: pdf(738.43 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper addresses an inter-stream synchronization issue between haptic media and voice in networked virtual environments. The paper proposes a media synchronization algorithm for the two types of media stream by enhancing the virtual-time rendering (VTR) algorithm, which the authors previously proposed. The new algorithm employs two types of error range in order to keep high quality of intra-stream synchronization at the expense of slight deterioration in the inter-stream synchronization q ...

**Keywords:** collaborative virtual environments, haptic media, media synchronization, voice

5 Media synchronization and QoS packet scheduling algorithms for wireless systems

Azzedine Boukerche, Harold Owens

February 2005 **Mobile Networks and Applications**, Volume 10 Issue 1-2

**Publisher:** Kluwer Academic Publishers

Full text available: pdf(579.10 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Wireless multimedia synchronization is concerned with distributed multimedia packets such as video, audio, text and graphics being played-out onto the mobile clients via a base station (BS) that services the mobile client with the multimedia packets. Our focus is on improving the Quality of Service (QoS) of the mobile client's on-time-arrival of distributed multimedia packets through network multimedia synchronization. We describe a media synchronization scheme for wireless networks, ...

**Keywords:** distributed algorithms, media synchronization, mobile multimedia, packet scheduling algorithm, quality of service (QoS), wireless communications

6 Applications 1: media fusion for communication and presentation: Exploring media correlation and synchronization for navigated hypermedia documents



Kuo-Yu Liu, Herng-Yow Chen

November 2005 **Proceedings of the 13th annual ACM international conference on Multimedia MULTIMEDIA '05**

**Publisher:** ACM Press

Full text available: pdf(691.96 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper is devoted to explore media correlation and media synchronization in a composite multimedia document, the so-called navigated hypermedia document in our language learning system, to facilitate the multimedia authoring, presentation, and access. Two levels of media correlation in temporal, spatial, and content domains are investigated: *syntactic level correlation* and *semantic level correlation*. We devise a capturing mechanism to record all the media streams and relations ...

**Keywords:** computed synchronization process, media correlation, media synchronization,

semantic level correlation, syntactic level correlation

## 7 Playing experience: From remote media immersion to Distributed Immersive

### Performance

A. A. Sawchuk, E. Chew, R. Zimmermann, C. Papadopoulos, C. Kyriakakis  
November 2003 **Proceedings of the 2003 ACM SIGMM workshop on Experiential telepresence**

**Publisher:** ACM Press

Full text available:  pdf(378.71 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present the architecture, technology and experimental applications of a real-time, multi-site, interactive and collaborative environment called Distributed Immersive Performance (DIP). The objective of DIP is to develop the technology for live, interactive musical performances in which the participants - subsets of musicians, the conductor and the audience - are in different physical locations and are interconnected by very high fidelity multichannel audio and video links. DIP is a specific r ...


**Keywords:** information interfaces and presentation, music performance, real-time interaction, remote collaboration

## 8 A synchronization model for recorded presentations and its relevance for information retrieval

### retrieval

W. Hürst, R. Müller  
October 1999 **Proceedings of the seventh ACM international conference on Multimedia (Part 1)**

**Publisher:** ACM Press

Full text available:  pdf(1.84 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


In order to improve the acceptance of recorded presentations, we introduce a new open document type covering a wide range of different media classes typically appearing in this scenario. Instances of this document type can be replayed using our time-based synchronization model. Random access in combination with the realized stream/media-layered synchronization mechanism results in essential features such as Random Visible Scrolling and Unrestricted Cross-Referencing ...

## 9 MPEG-2 coded- and uncoded-stream synchronization control for real-time multimedia transmission and presentation over B-ISDN



L. Li, N. Georganas  
October 1994 **Proceedings of the second ACM international conference on Multimedia**

**Publisher:** ACM Press

Full text available:  pdf(893.22 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A real-time multimedia communication system over broadband networks is introduced in the paper. This system consists of distributed database servers which store and retrieve data objects of different types of media and in different coding formats. The multimedia document is transmitted over the network as streams through different connections and presented to the user simultaneously. A set of stream synchronization control schemes is designed to control the multiple data streams (either in ...

## 10 An RTP-based synchronized hypermedia live lecture system for distance education



Herng-Yow Chen, Yen-Tsung Chia, Gin-Yi Chen, Jen-Shin Hong  
October 1999 **Proceedings of the seventh ACM international conference on Multimedia**

**(Part 1)****Publisher:** ACM PressFull text available:  pdf(930.85 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


In this article, we have introduced a "Live Synchronized Hypermedia Live Lecture (SHLL) System" using RTP to synchronize the live presentation of streaming video lecture, HTML-based lecture notes, and HTML page Navigation Events. The SHLL framework consists of three major modules: (1) SHLL Recorder- for recording the temporal information of the AV lecture and the HTML-based lecture notes navigation processes. (2) SHLL Event Server- for receiving, depositing, and multicasting SHL ...

**Keywords:** RTP, distance learning, multimedia synchronization**11 Synchronized continuous media playback through the World Wide Web**

Ketan Mayer-Patel, David Simpson, David Wu, Lawrence A. Rowe

February 1997 **Proceedings of the fourth ACM international conference on Multimedia****Publisher:** ACM PressFull text available:  pdf(214.01 KB) Additional Information: [full citation](#), [citings](#), [index terms](#)**Keywords:** remote video playback, toolkit**12 Data modeling of time-based media**


Simon Gibbs, Christian Breiteneder, Dennis Tsichritzis

May 1994 **ACM SIGMOD Record , Proceedings of the 1994 ACM SIGMOD international conference on Management of data SIGMOD '94**, Volume 23 Issue 2**Publisher:** ACM PressFull text available:  pdf(1.32 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)

Many aspects of time-based media—complex data encoding, compression, "quality factors," timing—appear problematic from a data modeling standpoint. This paper proposes timed streams as the basic abstraction for modeling time-based media. Several media-independent structuring mechanisms are introduced and a data model is presented which, rather than leaving the interpretation of multimedia data to applications, addresses the complex organization and re ...

**13 Document formatting: Inter and intra media-object QoS provisioning in adaptive formatters**

Rogério Ferreira Rodrigues, Luiz Fernando Gomes Soares

November 2003 **Proceedings of the 2003 ACM symposium on Document engineering****Publisher:** ACM PressFull text available:  pdf(483.39 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)

The development of hypermedia/multimedia systems requires the implementation of an element, usually known as *formatter*, which is in charge of receiving the specification of a document (structure, media-object relationships and presentation descriptions) and controlling its presentation. The process of controlling and maintaining the presentation of a hyperdocument with an output of acceptable quality is a QoS orchestration problem, which needs to be treated by formatters in two related le ...

**Keywords:** hyperProp system, hypermedia formatter, media synchronization, quality of service

14 The effect of stereoscopic viewing of a virtual space on a networked game using haptic media



Masaki Fujimoto, Yutaka Ishibashi

September 2004 **Proceedings of the 2004 ACM SIGCHI International Conference on Advances in computer entertainment technology ACE '04**

**Publisher:** ACM Press

Full text available: pdf(207.28 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

This paper deals with a game in which a user moves an object in a virtual space using haptic media in distributed virtual environments. We make a comparison of the operability of the game between stereoscopic viewing of the virtual space and normal (i.e., non-stereoscopic) viewing by experiment. We also clarify the relation between the effect of stereoscopic viewing and the deterioration in the operability owing to the network delay and its jitter. In addition, we calculate the gain of ste ...

15 Coordinating heterogeneous time-based media between independent applications



Scott Flinn

January 1995 **Proceedings of the third ACM international conference on Multimedia**

**Publisher:** ACM Press

Full text available: html(53.68 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

**Keywords:** auditory display, distributed systems, media integration and synchronization, operating system support, real-time scheduling, system architecture

16 Flow synchronization protocol

Julio Escobar, Craig Partridge, Debra Deutsch

April 1994 **IEEE/ACM Transactions on Networking (TON)**, Volume 2 Issue 2

**Publisher:** IEEE Press

Full text available: pdf(1.26 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#), [review](#)

17 Mechanisms of MPEG stream synchronization



G. J. Lu, H. K. Pung, T. S. Chua

January 1994 **ACM SIGCOMM Computer Communication Review**, Volume 24 Issue 1

**Publisher:** ACM Press

Full text available: pdf(660.18 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Media synchronization is an important issue in developing multimedia applications. MPEG is an international standard for coding moving pictures and associated audio for multimedia applications. Coded audio, video and other data streams are multiplexed into an MPEG stream. We introduce the syntax of the multiplexed MPEG stream and explain the mechanisms used to maintain media synchronization in a hypothetical model, system target decoder, in which it is assumed that data transfer and decoding are ...

18 A standard for multimedia middleware




D. J. Duke, I. Herman

September 1998 **Proceedings of the sixth ACM international conference on Multimedia**

**Publisher:** ACM Press

Full text available: Additional Information:

 [pdf\(1.31 MB\)](#)
[full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** PREMO, distributed multimedia, standards

19 [Embedded video in hypermedia documents: supporting integration and adaptive control](#)



Dick C. A. Bulterman

October 1995 **ACM Transactions on Information Systems (TOIS)**, Volume 13 Issue 4

**Publisher:** ACM Press

Full text available:  [pdf\(2.41 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

As the availability of digital video becomes commonplace, a shift in application focus will occur from merely accessing video as an independent data stream to embedding video with other multimedia data types into coordinated hypermedia presentations. The migration to embedded video will present new demands on application and support environments: processing of any one piece of video data will depend on how that data relates to other data streams active with ...

**Keywords:** adaptive control, embedded video, hypermedia documents, multimedia, synchronization, video presentation

20 [Applications: Annodex: a simple architecture to enable hyperlinking, search & retrieval of time-continuous data on the Web](#)



Silvia Pfeiffer, Conrad Parker, Claudia Schremmer

November 2003 **Proceedings of the 5th ACM SIGMM international workshop on Multimedia information retrieval**

**Publisher:** ACM Press

Full text available:  [pdf\(396.88 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Today, Web browsers can interpret an enormous amount of different file types, including time-continuous data. By consuming an audio or video, however, the hyperlinking functionality of the Web is "left behind" since these files are typically unsearchable, thus not indexed by common text-based search engines. Our XML-based CMML annotation format and the Annodex file format presented in this paper are designed to solve this problem of "dark matter" on the Internet: Continuous media files are annot ...

**Keywords:** Annodex, CMML, continuous media Web, meta data, open standard

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